DOCUMENT RESUME

ED 254 675 CE 040 925

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TITLE Identify Skills and Proficiency Levels Necessary for Entry-Level Employment for All Vocational Programs Using Computers to Process Data. Final Report.
INSTITUTION Spokane Community Coll., WA.
SPONS AGENCY Washington State Commission for Vocational Education, Olympia.
PUB DATE Feb 85
NOTE 20p.; Funded by the Research Coordinating Unit of the Washington State Commission for Vocational Education.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Accounting; *College Programs; Community Colleges; Competence; *Data Processing; Educational Needs; Employer Attitudes; *Employment Qualifications; *Entry Workers; Job Skills; *Office Occupations Education; Two Year Colleges; *Word Processing
IDENTIFIERS Washington

ABSTRACT

This study investigated computer and word processing operator skills necessary for employment in today's high technology office. The study was comprised of seven major phases: (1) identification of existing community college computer operator programs in the state of Washington; (2) attendance at an information management seminar; (3) production of a workshop to identify skills and proficiency levels necessary for entry-level employment for all vocational programs using computers; (4) development of an evaluation instrument based on 143 task statements within 7 duty statements from the workshop results; (5) administration of an in-depth statewide study by interview and by mail; (6) tabulation of findings, and (7) dissemination of results using graphic illustrations. The study found that the greatest number of employers required minimum proficiency rates of 10,000 keystrokes per hour for data entry operators with an error rate of 1; company proficiency levels for word processing operators were most likely to be between 50 and 65 words per minute, with an error rate of 5. The application software packages most often used were Lotus 1-2-3, WordStar, and MULTIPLAN. Respondents reported that word processing and accounting were the most frequent uses of computer applications. In order of importance, respondents rated these skills: task performance, communicating with others, preparing documents, sending and receiving documents, maintaining documents, maintaining equipment, managing records, and using equipment. After the current entry-level skills and proficiency levels were identified, an Information/Data Entry Specialist program was developed, to be implemented in the spring quarter of 1985. (KC)

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IDENTIFY SKILLS AND PROFICIENCY LEVELS NECESSARY FOR ENTRY-LEVEL EMPLOYMENT FOR ALL VOCATIONAL PROGRAMS USING COMPTUERS TO PROCESS DATA

FINAL REPORT

Project No. 84-AWE(234)NB

Research Project in Vocational Education
Conducted Under Public Law 94-482

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February, 1985

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RESEARCH SUMMARY

TIME PERIOD

May 1, 1984 to December 31, 1984.

OBJECTIVE

This study investigates computer and word processing operator skills necessary for employment in today's high tech office. The purpose of this report is to present the survey findings along with skills and proficiency levels necessary for entry-level employment in the field of automated information processing.

METHODS AND PROCEDURES

The study was comprised of seven major phases:

1. Identify existing state community college data entry, keypunch, clerk typist and word processing programs.
2. Attend the Information Management "New Directions in Management" Seminar.
3. Conduct a DACUM workshop to identify skills and proficiency levels necessary for entry-level employment for all vocational programs using computers and/or word processors to process data.
4. Develop an evaluation instrument based on 143 tasks statements within 7 duty statements from the DACUM panel results.
5. Administer the in-depth state-wide study in person and by mail.
6. Tabulate findings.
7. Disseminate results using graphic illustration.

RESULTS

After current entry-level skills and proficiency levels were identified, the Information/Data Entry Specialist program was developed and will be implemented Spring quarter 1985.

EVALUATION

Evaluation will be an on-going process to make changes and adjustments as needed.

CONCLUSION

On the basis of this study, there are numerous task and skill levels identified that could be considered in instructional planning and development.

The following breakdown lists the 16 industry classification of those responding to the survey. The percentage responding is shown by the type of business in which they work with the highest percentage listed first.

TABLE 2 - INDUSTRY CLASSIFICATION

17.1% - Distribution - Manufacturing
11.4% - Data and Word Processing Services
10.0% - Education
10.0% - Health Services
9.6% - Banking and Finance
8.6% - Government
7.1% - Other
5.7% - Communications
4.3% - Insurance
4.3% - Transportation
2.9% - Hotel - Motel
2.9% - Public Utility
2.9% - Real Estate
1.4% - Construction
1.4% - Legal Service
1.4% - Publishing

The in-depth random survey was administered in person and by mail in the following four geographic locations. Percentage of survey respondents is listed by the geographic locations.

TABLE 3 - GEOGRAPHIC LOCATION

40.0% - Seattle Area
27.1% - Spokane Area
21.4% - Tri-Cities Area
11.4% - Wenatchee Area

Computer and word processing operators were trained by one or a combination of the following:

TABLE 4 - EDUCATION

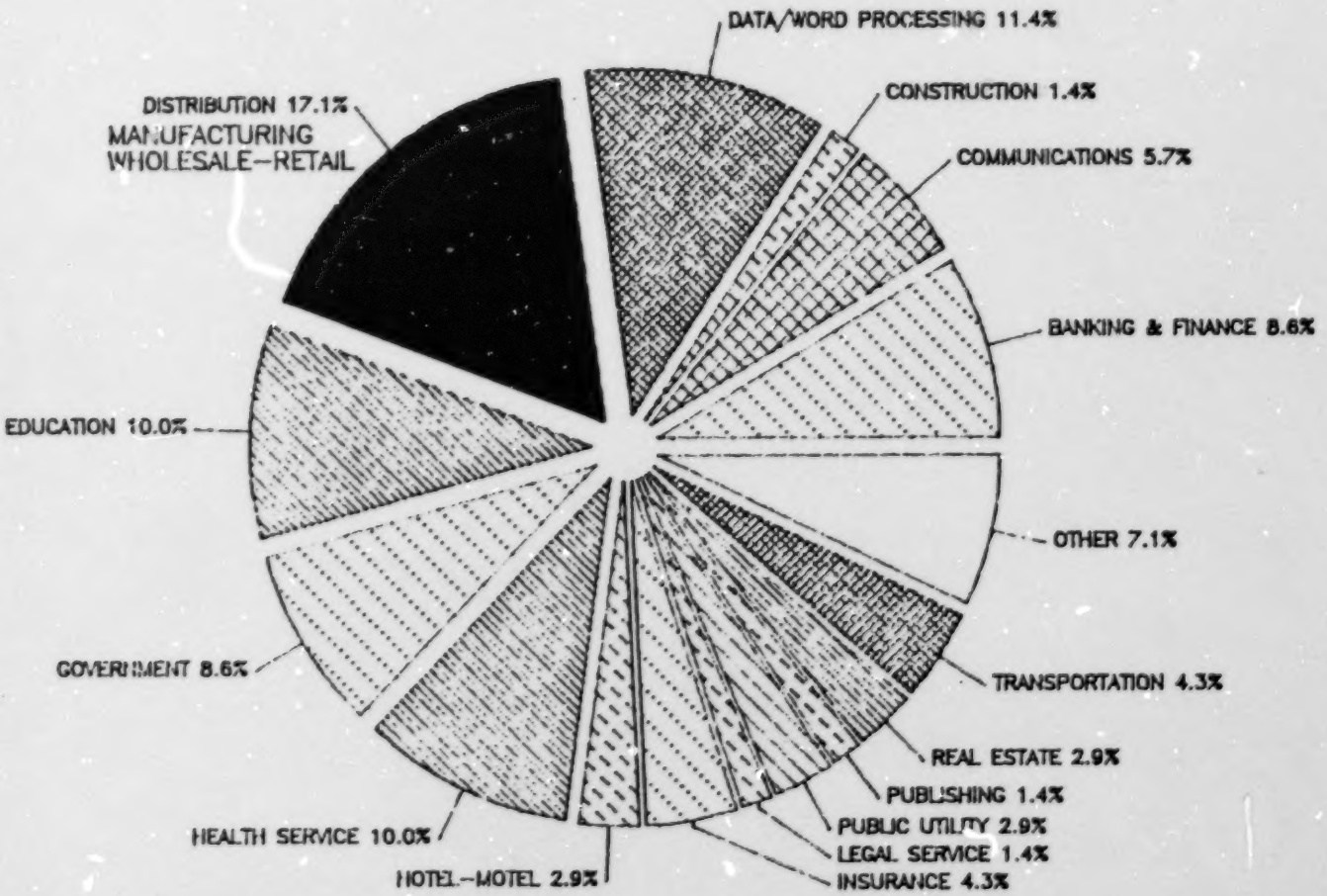
On-the-job (self taught)
Vendor (company computer school)
Four year college or university
Junior or community college
Military school
Private business school
Public vocational-technical school
Other

The following illustrates the industry classification, geographic location, and a cross tabulation of computer and word processing education.

NOTE: Graphic totals could exceed 100% due to multiple responses. Totals under 100% are largely due to no survey response.

INDUSTRY CLASSIFICATIONS

PERCENTAGE OF RESPONDENTS



DECEMBER 1984

WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

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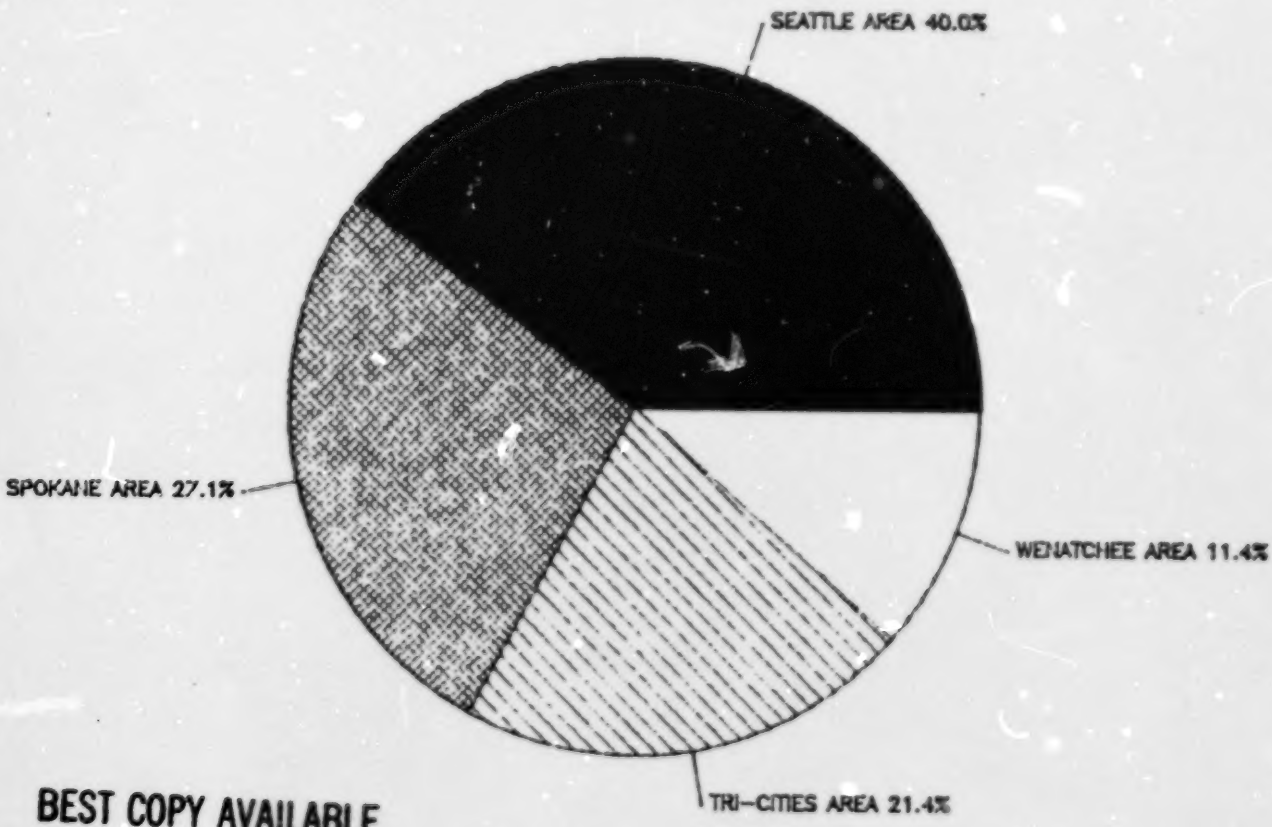
GEOGRAPHIC LOCATION

PERCENTAGE OF RESPONDENTS



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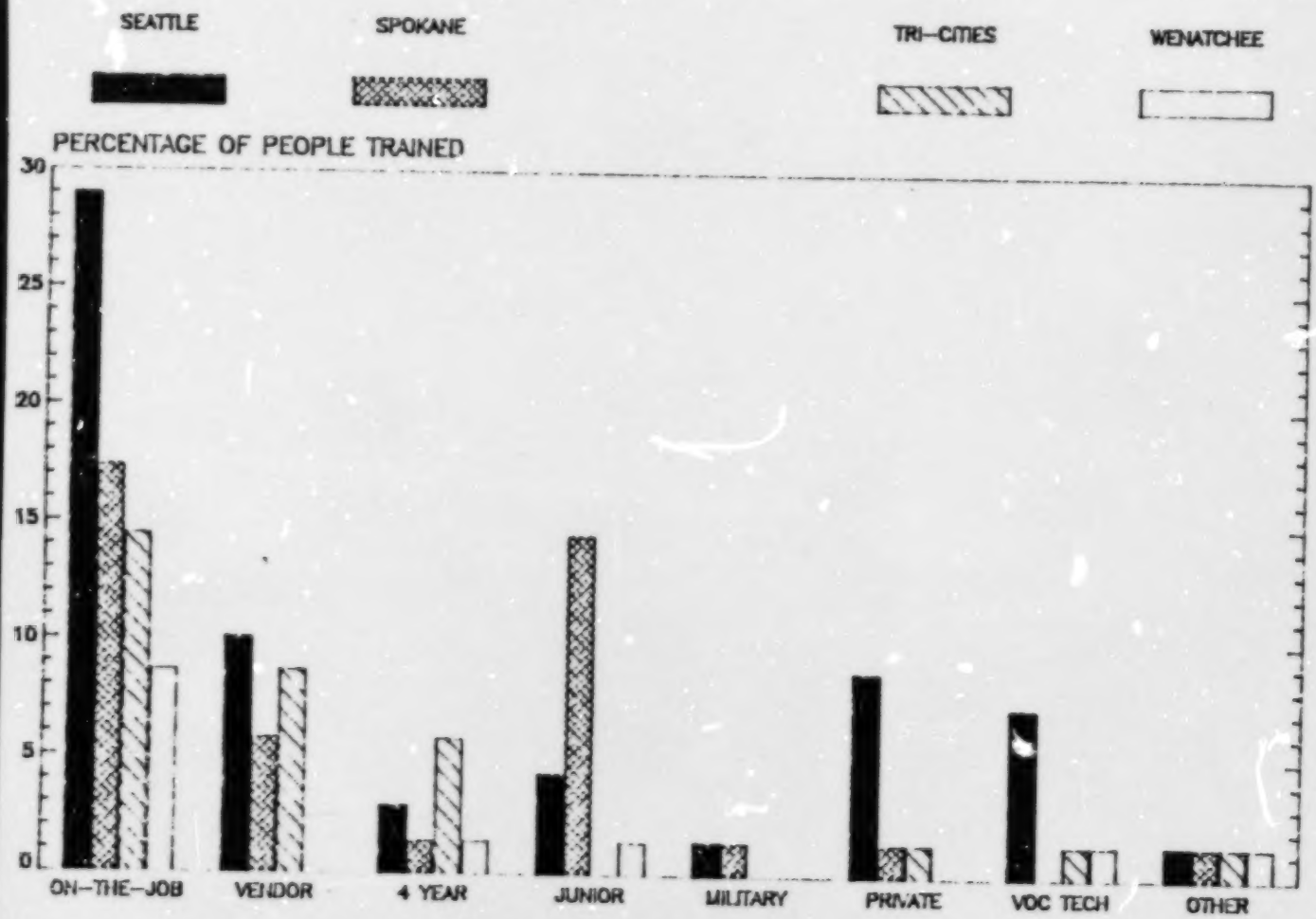
CROSS TABULATION OF

COMPUTER AND WORD PROCESSING EDUCATION



DECEMBER 1984

WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

The following table lists company minimum required proficiency levels for data entry operators.

TABLE 5 -	KEYSTROKES PER HOUR
12.9% -	10,000 ksph
4.3% -	12,000 ksph
4.3% -	9,000 ksph
4.3% -	Under 8,000 ksph
1.4% -	14,000 ksph
1.4% -	8,000 ksph
71.4% -	No response

	ERROR RATE
11.4% -	1 error
5.7% -	5 errors
4.3% -	2 errors
2.9% -	3 errors
75.7% -	No response

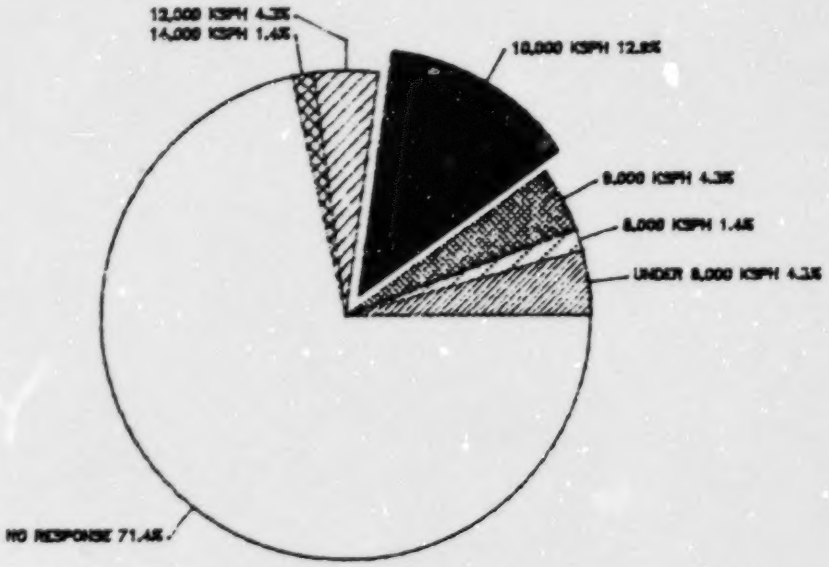
Company proficiency levels for word processing operators are shown in the table below.

TABLE 6 -	WORDS PER MINUTE
18.6% -	50 and 55 wpm
11.4% -	60 and 65 wpm
8.6% -	70 wpm
4.3% -	30 and 35 wpm
2.9% -	40 and 45 wpm
54.3% -	No response

	ERROR RATE
7.0% -	5 errors
4.2% -	0 errors
4.2% -	1 errors
4.2% -	2 errors
4.2% -	3 errors
2.8% -	4 errors
1.4% -	10 errors
71.8% -	No response

INDUSTRY MINIMUM REQUIRED PROFICIENCY LEVEL

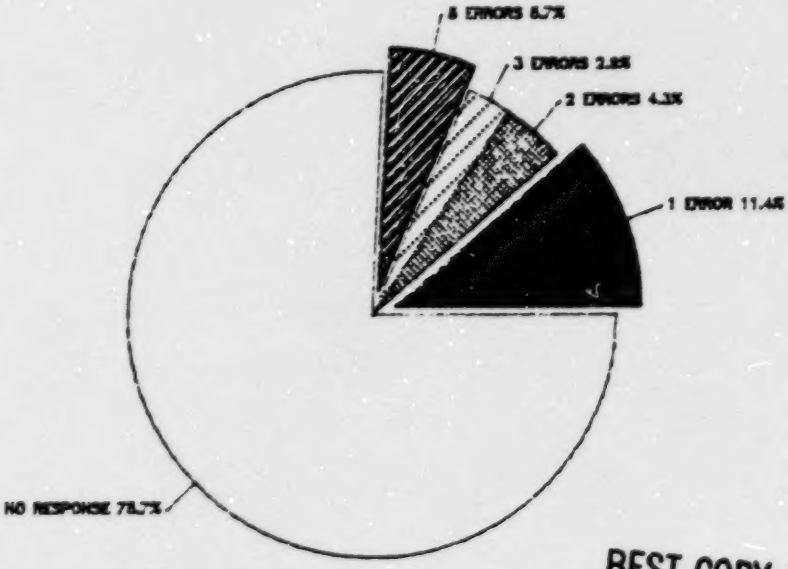
KEYSTROKES PER HOUR FOR ENTRY-LEVEL EMPLOYEES



DECEMBER 1984
WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

INDUSTRY MINIMUM REQUIRED PROFICIENCY LEVEL

KSPH ERROR RATE FOR ENTRY-LEVEL EMPLOYEES



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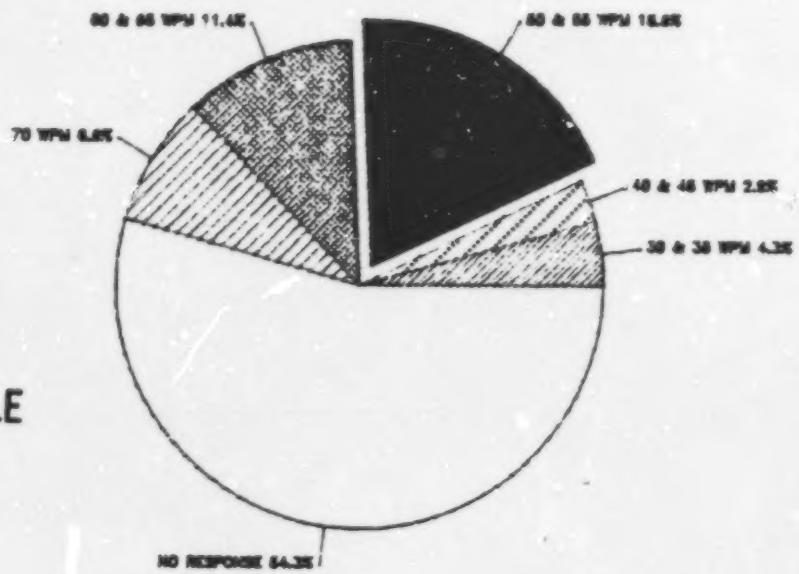
DECEMBER 1984
WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

INDUSTRY MINIMUM REQUIRED PROFICIENCY LEVEL

WORDS PER MINUTE FOR ENTRY-LEVEL EMPLOYEES



December 1984

WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

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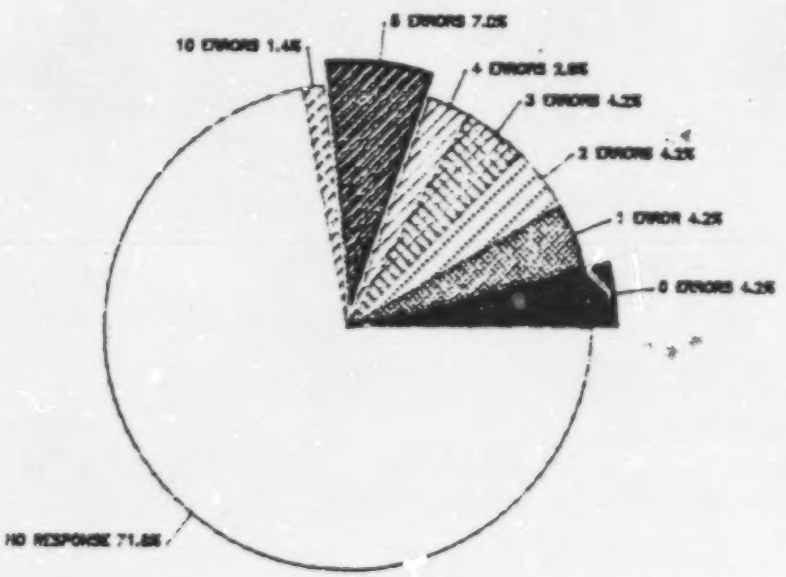
INDUSTRY MINIMUM REQUIRED PROFICIENCY LEVEL

WPM ERROR RATE FOR ENTRY-LEVEL EMPLOYEES



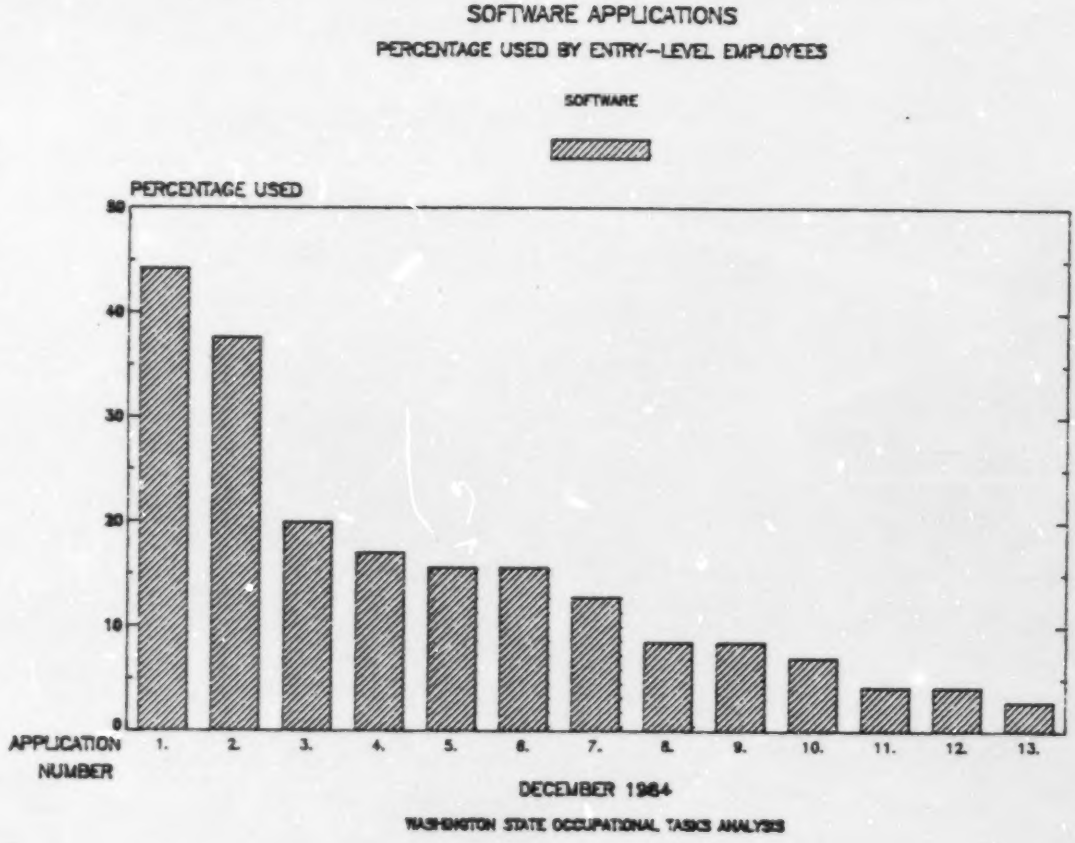
December 1984

WASHINGTON STATE OCCUPATIONAL TASKS ANALYSIS

The application software users listed most often as software used in their facilities were: (1) LOTUS 1-2-3, (2) WORD STAR, and (3) MULTIPLAN. One of the respondent's company had over 50 software products. The frequently used software applications were:

TABLE 7 -APPLICATION SOFTWARE PACKAGES

Accounting.	COMPUPAK, LOTUS, MULTIPLAN
Data Management . . .	DBASE II, DBASE III DATA EXPRESS, IMAGE INFORM, JAIMS, PROFILE 12 PROFILE 16, QUERY
Electronic Mail . . .	ETHERNET, NEWSNET, HPDESC
Finance	LOTUS, MULTIPLAN, SUPERCALC
Graphic Display/Design. .	BITS, BPS BUSINESS GRAPHICS EZCHART, HP DRAW, IBM CHART LOTUS, XEROX ADVANCED GRAPHICS
Payroll	LOTUS, MSA, REALWORD
Planning.	LOTUS, PCP, PROJECT-2
Spreadsheet	C-CALC, DATAGRAPH, LOTUS MULTI-CALC, MULTI-PLAN SUPERCALC III, VISICALC
Text Editor	BITS, PC WRITE, WORD PERFECT WORD STAR
Training Tutorial . .	DBASE II
Word Processing . . .	ATMS - III, HP WORD, MAGIC WAND MEMOMAKER, MULTI-MATE SPELLBINDER, SLATE, SUPER SCRIPTSIT, TEXPACK 4 TEXT PROCESSING, TYPRITE IV WORD TYPE II



The above illustration lists the automated software applications used by respondents on the job.

TABLE 8 - APPLICATION

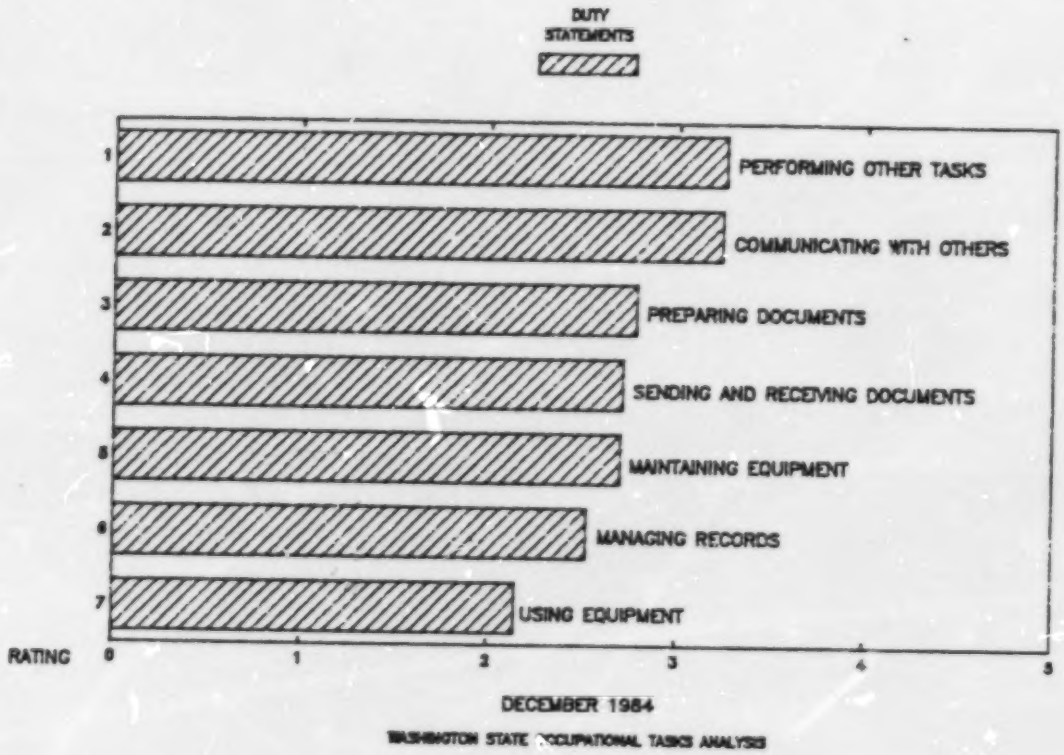
1. 44.3% - Word processing
2. 37.7% - Accounting
3. 20.0% - Spreadsheet
4. 17.1% - Payroll
5. 15.7% - Data management
6. 15.7% - Finance
7. 12.9% - Text editor
8. 8.6% - Graphic display/design
9. 8.6% - Planning
10. 7.1% - Electronic mail
11. 4.3% - Technical calculation
12. 4.3% - Training tutorial
13. 2.9% - Optical reader/scanner

The following pages group the computerized information processing systems used by the respondents.

TABLE 9 - EQUIPMENT AND APPLICATION

4 PHASE	DE
4 PHASE SYSTEMS 7202	DE
AB DICK MAGNA II	WP
AM 425	WP
ATV JACQUARD 100	MINI COMPUTER
BURROUGHS B1955	MAINFRAME
BURROUGHS B21-6B25	MICRO CR
CADO SYSTEMS 20/24	MINI-CPU
CMC 9 TRACK	DE
COMMODORE 8032	CBM
COMPAQ	DE
CPT 8000	WP
CPT 8100	WP
CPT 8525	WP
DAISYWRITER	PRINTER
DIGITAL VIT 101	DE/WP
EAGLE II	WP
GCS	DE
GCS-TELEX DATA EDIT	DE
HP 21MX	DE
HP 150	DE/WP
HP 2426B	DE
HP 2622A	DE
HP 3000	DE
HP 3000-42	DE
HP 3000-68	DE/WP
HP 9020	DE
HONEYWELL	MAINFRAME
IBM 129	DE
IBM 150	PC
IBM 3033	MAINFRAME
IBM 3101-20	CRT
IBM 3276	DE
IBM 3278	DE/WP
IBM 3279	TSO
IBM 3600	DE
IBM 3742	DE
IBM 4043	ON LINE
IBM 5251	DE
IBM 5281	DE
IBM 5496	DE

OCCUPATIONAL CHARTING



RATING SCALE
5 - Critical importance
4 - Very important
3 - Average importance
2 - Little importance
1 - No importance
0 - No answer

The occupational charting is the result of the statewide occupational analysis. The listing contains 143 task statements within the 7 duty statements. The duties were separated into tasks which could be performed to complete the duty. Depending on the size and policy of the company, some respondents performed all of these duties while others performed only one of the duties or a combination of duties and tasks. The means for each task statement are included in the following charting.

TABLE 10 - OCCUPATIONAL ANALYSIS CHARTING

DUTY - PERFORMING OTHER TASKS

TASKS	RATING
1. Handle confidential information discreetly.	4.17
2. Maintain personal hygiene and grooming.	4.17
3. Maintain company loyalties.	4.14
4. Perform as team worker.	4.09
5. Adhere to company policies.	4.02
6. Maintain orderly work areas	3.89
7. Adhere to Occupational Safety and Health Administration (OSHA) guidelines.	3.82
8. Promote personal development or growth.	3.81
9. Adhere to safety regulations.	3.77
10. Adhere to Equal Employment Opportunity Commission (EEOC) guidelines.	3.75
11. Plan and organize work for one's self	3.72
12. Participate in company programs	3.33
13. Maintain inventory control records.	2.49
14. Demonstrate equipment	2.39
15. Perform accounting functions as required.	2.35
16. Maintain petty cash funds	1.92
17. Perform cashier duties.	1.80
18. Other tasks	1.11

DUTY - COMMUNICATING WITH OTHERS

TASKS	RATING
1. Interact with co-workers	4.11
2. Interact with supervisors.	4.08
3. Listen actively to others.	4.05
4. Receive oral communications.	3.95
5. Use proper telephone techniques.	3.89
6. Share job-related knowledges	3.89
7. Project professional images.	3.87
8. Maintain customer relations.	3.80
9. Project supportive attitudes	3.75
10. Communicate with clients or users.	3.52
11. Send oral communications	3.46
12. Replay messages.	3.29
13. Negotiate work schedules and deadlines	3.28
14. Schedule work activities	3.26
15. Greet members of the public.	3.19
16. Use trade terminologies.	3.18
17. Communicate with vendors	2.97
18. Document work procedures	2.95
19. Organize and prepare written communications.	2.94
10. Other tasks.	1.89
21. Use electronic message systems	1.86

DUTY - SENDING AND RECEIVING DOCUMENTS

TASKS	RATING
1. Follow originator's instructions	3.68
2. Follow security procedures	3.37
3. Follow distribution procedures	3.33
4. Mail or transmit documents	3.05
5. Determine modes to be used	2.92
6. Route documents	2.81
7. Gain access to modes	2.61
8. Confirm deliveries	2.48
9. Print electronic mail	1.67
10. Other tasks	1.36

DUTY - MAINTAINING EQUIPMENT

TASKS	RATING
1. Follow vendor instructions	3.49
2. Handle storage media properly	3.43
3. House storage media properly	3.32
4. Perform housekeeping activities	2.75
5. Diagnose problems	2.73
6. Contact service personnel	2.73
7. Monitor environments	2.34
8. Perform preventive maintenance	2.30
9. Maintain service logs	2.26
10. Other tasks	1.78

SUGGESTED COURSE OF STUDY LEADING TO INFORMATION/DATA ENTRY SPECIALIST CERTIFICATE(a)

(a) First Quarter

(Ck)	Qtr.	Course Title	No.	Cr.
( )	FWS	Typ/Formatting	102	3
( )	FWS	Grammar & Punctuation	109	5
( )	FWS	Princ. of Accounting or Basic Accounting	101 51	5
( )	FWS	Business Math	103	5
		TOTAL		18

Second Quarter

(Ck)	Qtr.	Course Title	No.	Cr.
( )	FWS	Typ/Formatting	103	3
( )	FWS	Records Management	252	3
( )	FWS	Your Business Image	91	2
( )	FWS	Business Corresp.	272	5
		TOTAL		13

(b) Third Quarter

(Ck)	Qtr.	Course Title	No.	Cr.
( )	FWS	Machine Transcription	235	3
( )	FWS	Data Entry	140	6
( )	FWS	Intro. DP/Applications	104	5
( )	FWS	Speech for Business	201	3
		TOTAL		17

Fourth Quarter

(Ck)	Qtr.	Course Title	No.	Cr.
( )	FWS	Word Processing	252	3
( )	FWS	Adv. Data Entry	141	6
( )	FWS	Interpersonal Comm.	102	5
		TOTAL		14
		TOTAL CREDITS		62

(a) Admission to the first quarter of the Information/Data Entry Specialist Program requires a minimum typing speed of 35 words per minute.

(b) Admission to the third quarter of the Data Entry training requires a grace of C in all first and second quarter classes.

Qtr. Indicates quarter(s) class is offered.

(Ck) Column can be used to check off requirements as met.

62 Credits required for a certificate.

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